

Alex Gittens  
October 27, 2006

ACM 105: HW 4

**Exercise 1.** Let  $X$  and  $Y$  be Banach spaces and  $T : X \rightarrow Y$  be an injective bounded linear operator. Show that  $T^{-1} : \mathcal{R}(T) \rightarrow X$  is bounded iff  $\mathcal{R}(T)$  is closed in  $Y$ .